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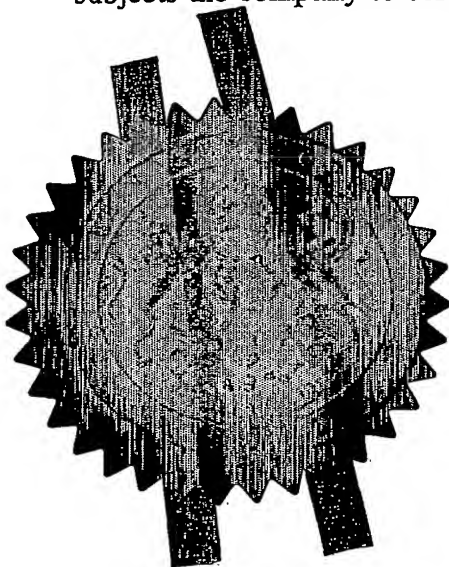
Signed   *K. Mahoney*

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1. Your reference	P019226GB
2. Patent application number *(The Patent Office will fill this part in)*	**0329108.5** 16 DEC 2003

3. Full name, address and postcode of the or of each applicant *(underline all surnames)*

INTELLPROP LIMITED
PO BOX 626
NATIONAL WESTMINSTER HOUSE
LE TRUCHOT ST PETER PORT
GUERNSEY

7900533001

Patents ADP number *(if you know it)*

If the applicant is a corporate body, give the country/state of its incorporation

A GUERNSEY COMPANY

4. Title of the invention

TELECOMMUNICATIONS SERVICES APPARATUS AND METHOD

5. Name of your agent *(if you have one)*

D Young & Co

"Address for service" in the United Kingdom to which all correspondence should be sent *(including the postcode)*

21 New Fetter Lane
London
EC4A 1DA

Patents ADP number *(if you know it)*   59006 ✓

6. Priority: Complete this section if you are declaring priority from one or more earlier patent applications, filed in the last 12 months.

Country	Priority application number *(if you know it)*	Date of filing *(day / month / year)*
GB	0327137.6	21 NOVEMBER 03
GB	0327372.9	25 NOVEMBER 03
GB	0328606.9	10 DECEMBER 03
GB	NOT YET KNOWN	12 DECEMBER 03

7. Divisionals, etc: Complete this section only if this application is a divisional application or resulted from an entitlement dispute *(see note f)*

Number of earlier UK application	Date of filing *(day / month / year)*

8. Is a Patents Form 7/77 (Statement of inventorship and of right to grant of a patent) required in support of this request?   **Yes**

Answer YES if:
a) any applicant named in part 3 is not an inventor, or
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    Not counting duplicates, please enter the number
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Continuation sheets of this form	NONE
Description	25
Claim(s)	0
Abstract	0
Drawing(s)	4

10. If you are also filing any of the following,
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Priority documents	0
Translations of priority documents	0
Statement of inventorship and right to grant of a patent (Patents Form 7/77)	2
Request for a preliminary examination and search (Patents Form 9/77)	0
Request for a substantive examination (Patents Form 10/77)	0
Any other documents (please specify) Letter to the Comptroller dated 16 December 2003	

11. I/We request the grant of a patent on the basis of this application.

    Signature(s)   Date 16 December 2003

12. Name, daytime telephone number and   D Young & Co (Agents for the Applicants)
    e-mail address, if any, of person to contact in
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TELECOMMUNICATIONS SERVICES APPARATUS AND METHOD

This invention relates to a telecommunications services apparatus for use with a mobile telecommunications system, such as a mobile telephone system.

Users of mobile telephones can directly call other users of telephones, and can also

5   have access to a variety of voice services, including network-based services such as voicemail and also information and entertainment services such as live radio feeds. However in all these cases they must know the number to dial.

Normally, a user originates a call to a voice service or an organisation by dialling a string of digits representing the telephone number of the desired destination. Most

10   people have difficulty memorising more than a few telephone numbers and therefore use various forms of directory to provide a translation from meaningful alphanumeric name to digit string.

In the case of mobile telephone users, the directory or 'phonebook' contained within the handset is very useful. However if a service or other destination is called

15   infrequently the user may not have stored the number, either because of capacity limitations or because future use was not foreseen. Later, when the call is required, obtaining the number from other sources may be difficult, especially if the user is away from home or office.

It is normally possible to store a single number that can access a service or destination

20   from any country. For example, (unlike a call from the fixed network) +44 1489 885877 will reach the required destination whether the call is made from within the UK or overseas. However should the number change, e.g. through a national code change, then the user will have to edit the mobile handset phonebook entry.

Some attempts to overcome the problem of making telephone numbers known to

25   potential callers have been made with personal numbers and particularly Freephone numbers. For example, generic identifiers in the UK such as 0800 FLOWERS may be used to route calls to a specific florist, or (with Intelligent Network number translation facilities) to the florist nearest to the caller. Specific identifiers, such as 0800 TELSIS, can be dialled to reach a particular company or organisation.

30   In another branch of communications, a similar problem of using long digit strings to identify Internet websites has been very effectively overcome by allowing users to

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enter alphanumeric addresses (domain names) of the form 'www.companyname.com' as an identifier of a desired destination. Such addresses are translated within the Internet network to the required numeric strings. Furthermore, Internet search engines are available so that when a user cannot remember or does not know the required

5   domain name, an approximation or keyword can be entered to enable intelligent identification of potentially desired websites, which is done by providing a list of possible sites.

Prior art disclosed in GB9917723.0 shows that alphanumeric entry on the user's handset using a text message can cause the return of a number to the handset, a process

10   known as 'Directory Enquiry'. The mobile phone user can then call a selected number, either by keying in the number again or by using the 'Use Number' facility available in some handsets, which enables extraction of numbers from SMS messages for immediate use in dialling. This method requires the user to perform two separate steps, first to send a text message to a well-known service number, and then to make a voice

15   call to a (different) received directory number. The same prior art document discloses two further approaches. Either the call can be automatically completed by outdial from the network ('outdial method') on receipt of the text message, or alternatively a handset improvement would permit automatic call set-up from the handset ('indial method') on receipt of the response.

20   Prior art disclosed in GB0310951.9 discloses alpha name servers used to provide the translation between alpha strings and network addresses in much the same way as Domain Name Servers provide IP addresses from Internet URLs.

Samuel Johnson (1707-1784) is quoted as saying "If it rained knowledge, I'd hold out my hand; but I would not give myself the trouble to go in quest of it." This aptly

25   illustrates the present situation with regard to connectivity between a mobile telephone and the very large number of potential audio sources, audio services, chat-lines, bulletin boards, organisations, product promotions etc. and other voice services and/or voice connections to which a mobile telephone user would like to connect – if it were easily possible to do so.

30   At the moment if a mobile telephone user wants to listen to a particular radio station, take part in a particular chat service or contact a particular voice bulletin board, the

user must know the specific service number, which in itself, for regulatory, technical or commercial reasons, may change from time to time.

At the moment there is no way for a network operator to easily discover what services or what connections its users would like. At the same time there is no technical means

5   to create new services immediately, i.e. at the instant of request, so that a user is connected as though the service had already existed.

In the case of connection to a service whose current existence is unknown, perhaps a specific chat or bulletin board service, there is currently no easy way for a mobile phone user to connect to such a service as there is no easy way to find out its existence.

10   In the prior art there is no currently used technique that can allow a caller to dynamically create a required service and this point is important because it illustrates the difference between a number-based system such as the ITU E.164 standard and one that could provide connectivity to services for which there is no number per se.

When start-at-the-beginning premium rate voice services were first introduced in

15   Europe, the main commercial constraints on such services quickly became apparent. There were three related constraints—

- Firstly, the service provider had to pre-decide what services to offer;
- Secondly, the service provider has to associate a telephone number with each service;

20   - Thirdly and most importantly, it was very expensive (and ongoing expense was required) to promote the services and numbers to potential callers.

Promoting unique telephone numbers for each and every service is expensive because of the enormous diversity of possible services and associated telephone numbers. This approach also places a high cognitive load onto users. For example, when a Radio

25   Station announces details of a competition or promotion that may be attractive to a particular listener, that listener must not only absorb the pertinent details of the promotion, but must also memorise or record a telephone number. The cognitive load of dealing with the telephone number detracts from the rest of the promotional material, and furthermore if the user is busy or driving, recording a telephone number

30   may be impractical.

Drawbacks of the '0800 TELSIS' approach to making numbers easier to remember include the fact that a number of different layouts for letters on telephone keypads are

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in use throughout the world, and also the fact that multiple alphanumeric strings can share the same numeric representation. Whilst the problem of keypad variations has been eased in recent times with the introduction of an ISO standard, organisations may still have to promote both alpha and numeric telephone numbers, e.g. '0800 TELSIS

5   (835747)'.

In addition, callers who are not in the 'home' country may have difficulty in accessing such numbers. For example, somebody in the Netherlands wishing to call Telsis in the UK would normally have to dial the international access code, followed by the country code and then the UK telephone number (without the leading zero), i.e. 0044 800

10   TELSIS. This means that the caller would have to know where Telsis is located and the appropriate country code and number format. Even if these are known, access is unlikely to be permitted because 0800 is a Freephone code and, even where networks allow it, the organisation may not wish to accept the charges resulting from international calls. An attempt to overcome these difficulties and restrictions has been

15   made through introduction of the Universal Freephone service in which a logical country code of 800 has been allocated. Thus dialling 00 800 00 TELSIS could allow access to Telsis from any country supporting the Universal Freephone service, but in practice the organisation has to arrange for the particular Universal Freephone number to be activated in every country from which it is prepared to accept calls.

20   A further limitation of the prior art as described in GB9917723.0 is that text sent to the network for the purpose of specifying a destination to dial is interpreted literally by the network, e.g. by being looked up in a database or table and converted to a telephone number. This approach is very restrictive in that it requires an exact match between the text entered and the database entry. Multiple database entries are required in the prior

25   art if the system is to cope with the many common variations of requested destinations. For example the user who has lost his credit card may wish to urgently call the Lost Card department of Barclaycard. Although provision of alphanumeric dialling capability would remove the need for the user to know or find the necessary telephone number, there are many possible forms of destination name that a user might compose,

30   such as 'Barclaycard' 'Lost Barclaycard' 'Barclaycard lost card' 'Barclaycard stolen card' etc. Without an intelligent text processing engine, the task of dealing with a wide range of possible user input becomes impractical, and systems relying on a simple

5

lookup table approach are doomed to provide inflexible and poor service. In the prior art, no indirection or intelligence is interposed between the text entered by the user and the lookup step.

Another limitation of the prior art as described in GB 9917723.0 is that text messaging
5   in traditional networks is subject to variable delays, particularly in the transit time through an SMS Service Centre. At busy times messages can be delayed for minutes or hours. This could result in unacceptable delays for the user trying to set up a voice call, and in the case of the network outdial method, would increase the window where an unexpected call could arrive between the sending of the text message and the outdial
10   from the network to the user, leading to possible confusion. It must be emphasised that any system that can subject the call set-up process to a variable and indeterminate delay will be unworkable and frustrating for the users. It is therefore a highly undesirable that an SMSC be included in any call set-up path.

Prior art also describes the use of WAP as a means to select an alphanumeric string as
15   a specifier of a desired destination telephone call. There is little support in current networks or handsets for WAP over SMS transport, while there is widespread support for WAP over a GSM traffic channel, which requires the set-up of a GSM data call prior to sending a request. The delay in setting up a GSM data call can be as much as 30 seconds, which makes this approach impractical for requesting connection by a
20   subsequent voice call.

Current limitations of international call handling mean that for voice calls dialled by a subscriber, the subscriber's CLI is often not delivered to a destination. This can restrict access to certain services and destinations. In contrast, outdial by the network to the subscriber provides a ubiquitous means for setting up voice calls without
25   problems of CLI and without regard to the customer's location.

Current mobile handsets do not provide for a text mode of entry for specifying a desired voice connection in alphanumeric form. The only alphanumeric entry modes available are typically—

1. a means to enter an alphanumeric string of up to 11 characters as the
30   destination for a text message
2. a means to enter alphanumeric characters as part of a USSD command string (sometimes called a Service Command)

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3.   a means to enter alphanumeric characters as the body of a text message

None of these methods currently provides a means to enter an alphanumeric address for a desired voice connection. Only the entry of the text message body is easily accessible in handset menus, the other two typically being buried several levels down

5   in a hierarchical menu structure.

Current handsets are not operable to automatically set up a voice connection in response to entry of alphanumeric characters or a sending of a text message.

According to the invention there is provided a mobile telephone terminal operable to provide an alphanumeric entry mode for entry of an alphanumeric string representative

10   of a desired connection and operable on entry of said alphanumeric string followed by a confirmatory action by the user, to transmit said alphanumeric string to the network and to automatically initiate a connection to a service platform.

According to a second aspect of the invention there is provided a mobile telephone terminal operable to provide an alphanumeric entry mode for entry of an alphanumeric

15   string representative of a desired connection and on entry of said alphanumeric string followed by a confirmatory action by the user, said terminal is configurable to compare said alphanumeric string with pre-stored entries in the terminal's internal directory and in the event of a match to automatically initiate a connection to a pre-stored telephone number associated with the matched entry and in the event of no

20   match to transmit said alphanumeric string to the network and to automatically initiate a connection to a service platform.

The invention will now be described by way of example with reference to the accompanying drawings, throughout which like parts are referred to by like references, and in which:

25   • Figure 1 is a block diagram of a telecommunications services apparatus in accordance with an embodiment of a Text Dialling system;

       • Figure 2 is a block diagram showing a network configuration of the dialling system; and

       • Figure 3 is a diagram showing an example instruction card for the service.

30   • Figure 4 shows a handset displaying an example of Text Dial entry

Referring to Figure 1, there is shown a Text Dialling system comprising a call connection system CCS and an alpha dialling decoder and database ADDD. The call

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connection system provides communication with a mobile station (caller) MS, and connection to a desired destination or service.

Figure 2 shows a mobile station MS (1) communicating with a network comprising a base transceiver station BTS (2), a mobile switching centre MSC (3), SMS Router (5)

5   and a short message service centre SMS-C (4). In a preferred embodiment, Text Dialling messages do not pass through the SMS-C (4). The MSC communicates via the Mobile Application Part protocol MAP with a Text Dialling system (9) embodying a Text Dialling system. The Text Dialling system (9) includes a SMS Router (5) through which some or all Mobile Originated SMS messages in this network

10   preferably pass, an SMS Wizard engine (6) for intelligently processing the entered text, a database (7) containing rules, exceptions and knowledge tables for the SMS Wizard and a Voice Switching equipment (8). The Voice Switching equipment provides communication to a selected internal connection such as a live feed (11), stored audio (14) or other service, or to an external connection, telephone (10), audio

15   service (13) or email server (15), or via other means (16). The SMS Wizard (6) may be connected to external systems and/or databases (12) such as an external alpha name server, or hierarchy of such servers.

Embodiments of Text Dialling remove a key constraint on voice or video telephony, which is that people currently have to obtain and dial telephone numbers in order to

20   connect. The concept of Text Dialling may also be applied to audiovisual and other types of connectivity in addition to voice.

It is much more useful to access services using text ("Text Dialling") as names are stable for long periods and are so easily remembered that there is no need for pre-planning of phone book entries.

25   So for example if one could directly Text Dial—

                Radio 4

        or   Manchester United Chat

        or   Vodafone Customer care

then connection is easy for the mobile handset user, and because callers could now

30   connect easily it would be worthwhile for other parties to provide useful connections. Further examples of the types of connectivity that would be useful to mobile telephone users are now given in order to illustrate an embodiment of Text Dialling. The Text

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Dial column shows the text entered/dialled in order to achieve the desired connectivity and the Benefit column provides an explanation of the benefit of Text Dialling.

Text Dial	Benefit
Vodafone Customer Care	Wherever and whenever, one could contact a customer-care service without any need to remember a number
Metro Radio	One can gain immediate access to any radio station live-feed offered by the network provider; all the user needs to know is the station name. This is useful in many cases for listening to live commentary of home football games. (Note: Metro Radio is the independent radio station for Tyneside in the UK, home of the Newcastle United football team.)
PowerFM Romance	Text Dialling allows radio stations to promote easily memorable promotions – as in this example, which could be for a dedication service on Valentine's day. All that the radio station has to do is advise listeners to Text Dial "PowerFM Romance." It's now much easier to promote a wide range of services and much, much easier for listeners to connect to them, as compared with the current situation where listeners have to remember unique telephone numbers. (Note: PowerFM is an independent radio station for Central South Hampshire in the UK.)
News	One can access start-at the beginning News provided by the network provider without ever having to worry whether such a service is available or what number to use.
BBC News	One can access branded News
ITN News	One can access branded News
Bloomberg	One can access branded/specific News
Business News	One can access specific News

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L'Oreal hair care	L'Oreal can now easily provide proprietary hair care information to its customers, and unlike a number based service there is no difficult-to-remember number and reinforcement of the service can be achieve by repetition of the phrase alone.
Clarins or Clarins news	Clarins can now ensure that it's very, very easy for women to get information on Clarins products. As there is no number involved, there is no need to remember a number and hence no barrier to use – to the benefit of Clarins and its customers.
Frosties Florida competition	A breakfast cereal product can promote a competition where the name of the promotion is the means to access the promotion – resulting in a better-focussed, more cost-effective promotion. (Note: Frosties is brand of UK breakfast cereal)
Shake Me	This is perhaps the easiest example to understand in terms of Text Dialling. The strap-line for the 'Orangina' drink is (in English) "Shake Me." To run a customer promotion before Text Dialling it would be necessary to promote a number on television and/or radio and/or publications and /or the product. However Text Dialling allows customers to connect directly to the promotion without requiring a number to be involved – all the customer needs to do is to remember the single phrase "Shake Me", which can be easily promoted, for example on the radio.
Pompey chat	Chat lines can now be provided with no requirement to promote a number – and even more powerfully, Text Dialling allows a chat line service to be allocated dynamically so that for example the Pompey Chat service would start up when the first caller Text Dialled it. (Note: Pompey is the colloquial name for the football club of Portsmouth in the UK.)

10

Man U messages	Bulletin Board services can now be provided with no requirement to promote a number – and services can also be created and managed dynamically, providing economic benefits to network operators and improved service to callers given the almost unlimited number of bulletin boards that can be offered. A bulletin board can be automatically created on first use.
Kylie	The world of celebrity is very important to many people and an easy and memorable way to get up to date information on a celebrity in a warm, emotional way (i.e. by voice) provides great utility. It is also of benefit to the celebrity to support such services.
George Clooney	Another celebrity for ER fans!
Terminator 3	Many of today's products such as films, are heavily branded and an easy and memorable way to get up-to-date information on them is highly desirable for potential cinema goers (in the case of films) and is a very attractive proposition for a film's promoters.
another@telsis.com	Sometimes the only contact details for a person or an organisation are an email address and yet one would like to simply leave them a voice message. A Text Dialling system can be configured to connect the caller to a voice email system that will record a voice message and then forward it as a voice attachment to the email address.
NHS Direct	Many Services or Organisations have well known names, but the associated number may not be available when contact is required. Text Dialling provides immediate connectivity.
Barclaycard lost card	In emergency situations it is important to establish contact immediately. Text Dialling allows a caller to use most meaningful text inputs in order to establish the required connectivity.

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| RAC breakdown | In emergency situations, the ability to immediately Text Di ensures that there are no problems in establishing the requir contact. |
| 0797835225 Voice Mail | Text Dialling can also be configured to provide dire connection to a telephone's Voice mail box so that a messa; can be left for later retrieval (and if required, repeat retrieval.) |

In February 2004 it is anticipated that there will be 1 billion GSM handsets in use and that almost all, if not all, of these handsets will be capable of voice calls and text messaging.

5 Although the ability to dial by entering text can be seen to be if great utility, if the only way to introduce such a service was to replace all handsets as well as upgrading all networks then the current economic benefit of Text Dialling would be significantly reduced.

Embodiments of this invention provide for Text Dialling using a modified mobile

10 handset operable to accept an alphanumeric string representative of a desired connection and to accept a confirmatory action from the user, and thereby to initiate a text dialling process involving transmission of a text message to the network carrying the entered alphanumeric string, and set-up of a voice call to a service platform, resulting in set-up of a voice call between the user and the desired connection.

15 The invention is also applicable to fixed line handsets that have a capability for users to enter text, and to send alphanumeric information to the network. An example would be an ISDN handset connected to an ISDN network, where signalling information, that can include alphanumeric data, can be sent over a data channel. Various signalling protocols, including the Keypad protocol exist that can support this type of operation.

20 Alternatively Frequency Shift Keyed modem techniques are commonly used to transfer numeric information over standard telephone lines, for example as part of protocols for delivering CLI to user terminals, or transmitting and receiving SMS messages over fixed lines. These techniques could be readily adapted for the sending of Text Dial information, associated with a desired connection, to a service platform.

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Provided the user's terminal and the connected service platform have appropriate capabilities, the invention may also be used for audiovisual and other types of connection, permitting for example connection to, and browsing of, other video-capable terminals, an archive of video clips, video bulletin boards, video chat services

5   or video live feed sources, or the retrieval of news items stored in video form. Further examples of embodiments of the invention are described in the context of voice services but also apply to other forms of connection such as video.

An alternative embodiment of the invention may examine the handset's internal phone-book to check for a match between pre-stored alphanumeric entries and the

10   entered string. In the event of a match, a pre-stored number from the handset's phone book may be substitutes as the destination for the initiated voice call, while in the event of no match, the handset may initiate a text dialling process involving transmission of a text message to the network carrying the entered alphanumeric string, and set-up of a voice call to a service platform, resulting in set-up of a voice call

15   between the user and the desired connection.

Embodiments of Text Dialling are described to show how Text Dialling can be achieved without using modified handsets. However these methods place a higher cognitive load on the user and are not as simple to use as the present invention, which uses a modified handset. The operation of apparatus in the network to support the

20   operation of the present invention is also described.

The technologies of Intelligent Handsets, Text Messaging for rapid alpha entry, SMS Routers for rapid delivery without variable delays, SMS Wizard for intelligent processing and interpretation of text, Alpha name servers for managed translation of alpha names into connections and Voice Switching Equipments for connecting the

25   caller to the requested name have been brought together to enable a facility known as Text Dialling, which permits any mobile phone user, with only the basic call features of voice and text, to be connected to any organisation, company, brand, chat room, celebrity message, local service, live audio feed, voice mailbox etc... the list is endless. The step change in connectivity provided by Text Dialling cannot be

30   underestimated as it allows names to be used that users already know. The connection may be made by a variety of methods such including but not limited to—

- Circuit switched voice call

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- Packet switched voice call
- Direct connection internal to the Voice Switching Equipment
- TCP/IP
- ATM

5   The present invention forms a component of an improved 'Text Dialling' system and comprises modifications to the handset. Text Dialling without this improvement is applicable immediately to the vast majority of the mobile telephone handsets in use, and to many fixed line terminals. Text Dialling is applicable to fixed network terminals that support voice and text sending. Further aspects of Text Dialling ensure

10   that the text message is delivered rapidly to the apparatus to enable rapid and predictable call-set-up performance, without the variable delays introduced by traditional SMS network architectures. Although Text Dialling is operable on an unmodified basic handset that needs only to support voice calls and text message sending, the present invention discloses improvements that are gained by using a

15   modified handset.

Further embodiments of Text Dialling without the proposed improvement are now described.

In an embodiment of Text Dialling, the mobile user composes an SMS text message that comprises an identifier for the required destination party, service or category of

20   services. The message is sent to a service number via the mobile telephone network to the ADDD. Preferably the SMS text message is routed via an SMS Router rather than through an SMSC using a technique known as grooming or direct delivery. This removes temporal ambiguity from the call set-up process and provides predictable call set-up performance. The ADDD system performs processing on the entered text using

25   an SMS Wizard that is part of the ADDD and derives a preferred form of the requested destination. The apparatus then performs a database look-up using the preferred form to identify a requested connection that corresponds to the text identifier. In the case of a category of services, sponsored telephone numbers may be provided as the preferred connection translations, allowing the directory system to provide a commercial

30   income.

In an alternative embodiment of Text Dialling the system may be operable to use the entered text directly without translation by an SMS Wizard.

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Preferable embodiments of Text Dialling utilise a text message decoder in the form of an SMS Wizard, such as is described in GB 0021496.5. This is operable to intelligently process received text using a system of exceptions, classes and rules to derive an alphanumeric string from the input text supplied by the user. The processing

5   is able to cope with multiple forms and spellings of names, different short-forms and arbitrary punctuation. Preferably the derived string determines the audio that is played to the user for confirmation before the user is connected. For example, if the user enters 'Virgin Airline', the SMS Wizard is able to interpret this as a request for connection to a number for Virgin Atlantic, and announces for example: "connecting

10 to Virgin Atlantic." Variations such as Airways or Airlines are provided for in the SMS Wizard's text processing, and the preferred or correct form is the one derived.
Optionally the system may offer choices to the user if the SMS Wizard is not able to determine a resolution of the entered text. The choices may be offered as an audio menu when the voice call is connected, or may be sent in a text message.

15 The derived string is passed to a lookup process, preferably implemented as an external Alpha Name server that is analogous to the Domain Name server in TCP/IP networks. The Alpha Name server is preferably centrally maintained, although its implementation may be distributed. The name entries in the alpha name server are in the same form as the derived strings in the SMS Wizard, and are used by the system to

20 initiate connections.
Preferably the Alpha Name server is a managed resource, which means that the entries and translations that it makes are managed and controlled. In contrast, the prior art describes databases where users can add their own aliases in a free-for-all fashion as is common on web email systems. This leads to an anarchic an un-organised naming

25 scheme, where generally the contact-name of any subscriber cannot be guessed. This is the exact opposite of the intent of Text Dialling where it is desired that connectivity should be enhanced because people are able to Text Dial names that they already know.
Preferably the apparatus is arranged to commence outdial first from a Voice Switching

30 equipment to the mobile station that initiated the text message, and on answer to effect the requested connection associated with the received text message.

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Preferably the CLI of an outdialled call to the originator of the text message is the same as the service number to which the text message is sent, allowing the user to easily recognise the call as being the one initiated by the text message, rather than a different call. Preferably the CLI of the originator is passed to the requested

5   connection.

The outdial to the mobile station that initiated the text message is preferably prevented from going to Voice mail or to another diverted number as this would cause unexpected and undesirable behaviour. For example, if this were not prevented, a voice mail system could become connected to the destination number that the user

10   requested. This situation may be avoided by outdialling with call parameters set to prevent diverts. Alternatively, diversion may be detected by the apparatus and the call set-up immediately terminated, in which case the apparatus preferably notifies the originator by SMS. If the call back to the originator does not result in answer, then connection to the requested destination is not initiated. The apparatus may employ a

15   retry algorithm that attempts to connect to the user again in the event that the call back fails.

The 'outdial' method described above is preferable to an alternative 'indial' method that is now described. Outdial is preferable because it can work while the user is roaming, without any requirement for the roaming network to support CAMEL or

20   other special facilities. Text Dialling requests sent by SMS are automatically routed back to the home network using the global title of the home network's SMS Service Centre that is programmed into the handset. Similarly if USSD is used as the transport for the text request, certain ranges of USSD command codes are specified as being transported transparently to the home network. When the apparatus outdials to the

25   user, it does not matter where the user is located or whether he is roaming, since mobile networks are designed to route voice calls correctly. Therefore the Text Dialling user is able to receive a call-back and to be connected to a destination regardless of where he is roaming.

In an 'indial' implementation, optionally the service number used for the text message

30   and the service number used for the voice call are the same service number. Preferably an international standard is adopted whereby a preferred short service number is

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operable to connect the caller to apparatus in his home network to facilitate Text Dialling while roaming.

Preferably the first acknowledgement of the text message delivery received at the handset is indicative that the apparatus has received and processed the message and is

5   ready to accept a voice call and effect the requested connection associated with the received text message.

Whether an outdial or indial method is used, the text message decoder may include a database linking alphanumeric identifiers with respective connections. Means may be provided for accessing at least one external database linking further text identifiers

10   with respective further connections.

The apparatus optionally retains memory of the requested connection last used so that further calls or reconnections may be made without re-entry of the alphanumeric text message. The memory data associating a CLI with a previously used connection may be stored in a network data store or in a data store or table within or associated with

15   the apparatus. The use of memory in this way is particularly applicable to 'outdial' implementations of Text Dialling where the apparatus dials back to the originator. Indial implementations may also use memory, but care must be taken to avoid a race condition between a text message from a user specifying a desired connection and a voice call from the same user with intent to connect to the specified connection. If the

20   voice call arrives and is processed before the text message has been processed to determine a connection, then there is a possible ambiguity in whether the system should wait, or use a previous connection identity stored in memory. In a preferred implementation, return of a 'message sent' type of acknowledgement to the user is indicative that text processing is completed and that a subsequent voice call will

25   invoke the most recently requested connection.

An embodiment of Text Dialling is also operable, subsequent to a drop in the connection, to accept a voice call addressed to the said service number as a request to reconnect.

In a commercial implementation of Text Dialling, it is envisaged that an outdial

30   implementation could advantageously be launched first, since this mode of operation requires the least customer familiarisation and is therefore more easily adopted. The users simply send a text message to a short code and they are called back and

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connected. This process only requires one action on the part of the user, which is sending a text message. However there are billing issues as described below.

An advantageous second phase of implementation could offer an indial version of the service. An indial implementation of Text Dialling provides a number of advantages:

5
- No billing changes whatsoever are required in the network, since the only operations carried out by users are the sending of text messages and the initiation of voice calls. Both of these operations are already covered by existing billing systems.

- Call set-up can be faster, since at least part of the text message transmission
10   and processing time can take place in parallel with call set-up time for the indialled call.

An advantageous third phase of development could be the introduction of modified handsets, such as those utilising the present invention. Such handset modifications do not require further changes in the network beyond those already required to implement
15 Text Dialling using standard handsets.

In a further embodiment of Text Dialling, the user sends a text message to a short code, preferably by sending a GSM Short Message, an preferably to the destination number 222, to specify a desired connection, and subsequently makes an indialled call to the apparatus. There are a number of options for how the indialled call could be
20 initiated.

1. The user could dial a short code. In this case the short code dialled would preferably be 222 as this is the same as the preferred short code destination for the text message. The network would be configured to route calls to this short code to the apparatus. A disadvantage of this
25   method is that it does not always work for roamers as the roaming network may interpret short code numbers differently from the home network.

2. The user could dial a long number in international format to set up a call to the apparatus. The network would be configured to route calls to
30   this number to the apparatus. This will work in all cases even when the user is roaming, since the international prefix and network code will route the call to the home network.

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To make the dialling process easier for the user, the long number could be assigned to a 'speed-dial' key on his handset. In this way, once the number is programmed into the handset, the user no longer has to remember the number. Alternatively, the number could be programmed into the handset's phone book, for recall when required.

5   A key advantage of the indial method of operating a Text Dialling service, over an outdial implementation, is that the indial method required no billing changes whatsoever to the network. In contrast an outdial method may require a means for charging the called user for the call leg between the user's terminal and the apparatus. For example, if the user is roaming the outdialled call leg will usually involve an

10   international call which may need to be charged. The charge may either be borne by the user, a situation known as reverse billing, or may be charged to a third party, as for example in the case of a Freephone service. Reverse billing can take some time for a network operator to implement and test. For minimum time-to-market, an indial-based implementation may therefore be preferable.

15   So-called 'Speed-dial' functionality is commonly available on mobile handsets, and allows a simple key operation, for example a short sequence of keys or a long press on a single key, to activate a pre-stored dialling function. Typically, the speed-dialling function of a handset may be disabled, and is often disabled by default when a new handset is supplied. Disabling speed-dialling prevents inadvertent dialling of numbers

20   if keys are pressed accidentally. Alternatively, if a user wishes to enable speed dialling, a keypad lock may be activated when the handset is not in use to prevent inadvertent dialling of numbers.

On some handsets, a key such as the digit '1' key, is reserved for speed dialling the user's Voice mail. The voice mailbox access number is usually programmed into the

25   handset to enable this feature, which is often operable whether or not speed dialling is enabled for the other keys. By substituting an access number for Text Dialling for the voice mailbox number programmed into the handset, easy dialling of the Text Dial apparatus may be achieved. Alternatively, if it is not desirable to remove the speed dialling of Voice mail, an alternative key may be substituted. Preferably the access

30   number for Text Dialling may be assigned to digit key '2'. Speed dialling would need to be enabled on a standard handset for this to be operable. In this case an optional variant would preferably send the text message to 2 (as opposed to a short code such

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as 222) so that the user experience was more clearly defined i.e. the same key for text and voice.

The methods described here for implementing indial-based Text Dialling are operable on unmodified mobile handsets, on a mobile network with an unmodified billing
5 system.

The present invention is now described, which provides a simplification and improvement for the users of Text Dialling.

In an embodiment of the present invention, the handset is modified to combine the step of entering and confirming an alphanumeric string with the step of initiating a voice
10 call to the network into a single operation for the user. The perception of the Text Dialling operation for the user is then very similar to the operation of entering a telephone number and pressing 'Send', resulting in the set-up of a call. With the present invention, Text Dialling is reduced to entering an alphanumeric string and either pressing 'Send' or making an equivalent confirmatory action.

15 In a preferred embodiment of the invention, the mobile handset is operable to be placed into Text Dialling mode by a single keypress or sequence of keypresses. On many handsets, such as many of those produced by the Nokia Corporation of Finland, the # key is already used during text message entry to switch between the following entry modes—

20   1. predictive alphanumeric (sometimes called T9) with capitalisation
         2. predictive alphanumeric without capitalisation
         3. non-predictive alphanumeric with capitalisation
         4. non-predictive alphanumeric without capitalisation.
         5. numeric

25 The first 4 modes may normally be cycled through using short presses of the # key, while switching between numeric and alphanumeric entry mode is achieved with a long press of the # key.

Equivalent functionality is available on other types of handset. Many text message users are familiar with switching between these modes of operation while entering a
30 text message. However when the handset is in standby or idle mode or at its main menu, most handsets are operable to enter a telephone number directly, but are not operable to accept alphanumeric entry.

20

In the preferred embodiment, a handset in standby mode is operable to be placed in Text Dialling mode by pressing the # key twice, or by a single long press on the # key. The handset preferably indicates that it is in Text Dialling mode by an on-screen symbol or heading. Once in Text Dialling mode, the handset may preferably by cycled

5   through the various predictive and non-predictive modes of text entry with and without capitalisation by short presses of the hash key, while a further long press will return the phone to standby mode.

While in Text Dialling mode a character count is preferably displayed that indicates the maximum number of characters that may yet be entered before the Text Dialling

10   string reaches maximum length. The longest Text Dialling string usable depends on the transport used. A preferable implementation uses SMS and so can carry 160 characters from the 7-bit GSM ASCII character set for example.

Once the user has entered an alphanumeric string representative of a desired voice connection, the handset is preferably operable to accept the same confirmation action

15   as is used on the handset for confirmation of a numeric dialled string. In most handsets this is a single press of the key known as the 'Send' key or the 'Green button'.

The handset then preferably completes the Text Dialling process automatically, preferably by first sending the entered text string to the network, for example by SMS,

20   and then simultaneously or subsequently initiating a voice call to a service platform. Alternatively, in some implementations it may be desirable to set up the voice call first to optimise the caller experience, for example by minimising the time between the user confirming the entered text to the user hearing a network announcement. The network is arranged to route calls to this service platform to the Text Dialling

25   apparatus in the network, where the call can be routed to a connection determined according to the processing of the sent text string.

The handset may complete the Text Dialling process automatically either by means of embedded processing in the handset software, or application level processing such as is achievable using SIM-TOOLKIT or similar tools. The text string may be

30   communicated to the network by a variety of methods including but not limited to—

- Short Message Services SMS
- Unstructured Supplementary Service Data USSD

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- General Packet Radio Service GPRS

And thereby received and routed appropriately to the Text Dialling apparatus in the network. The invention is also applicable to so-called 3G or third generation mobile telephone networks by choice of suitable means for transporting the alphanumeric

5   string from the handset to the network and setting up the associated voice call.

Text Dialling is operable to provide the caller with a wide variety of connections including but not limited to—

- Start-at-the-beginning audio sources
- Live feed audio sources

10   - Celebrity news
- Product promotions
- Chat services
- Destinations that do not have a telephone number, but may nevertheless be routed to, for example over an IP data network

.15   - Voice mail systems
- Paging or messaging systems
- email
- Agents or operators
- Other telephones fixed or mobile

20   - Any other type of telephony service

It should be noted that these destinations do not necessarily have a telephone number, and in some cases the apparatus is operable to connect to a destination that does not have a diallable number in the normal sense. For example direct connection to a voice mailbox max be achieved using Text Dialling provided network signalling permits it,

25   yet the voice mailbox may not be diallable directly by a subscriber, or have its own telephone number. Thus the connection resolved by the apparatus may be a routing specified in other ways than a telephone number.

The connection may be to a resource within the Voice Switching apparatus, for example utilising stored audio. The connection may be to a conference or chat system.

30   If the Voice Switching equipment is distributed across several devices in a network as would be desirable for geographic redundancy, then it may also be desirable to

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implement a centralised control function, such as a Service Control Point, to manage some types of service.

A further example is provided by connection to email. In a preferred embodiment, a user that Text Dials an email address, i.e. sends a text message containing an email address to a service number, is connected to a recording service which is operable to deliver a recorded voice message to the specified email address.

The SMS Wizard preferably retains memory, on a per CLI basis, of the last connection used by each user. In a national implementation, subsequent voice calls sent to a service platform may automatically use the last connection without recourse to further lookup. Internationally this may not be effective, because short codes may have a different effect when dialled on a roaming network. However commercial adoption of Text Dialling may preferably result in the specification of an internationally agreed short code, such as 222.

Preferably the system provides an audio announcement to one or both ends, to indicate to the caller exactly what connection has been reached, and in certain cases to a recipient to indicate or advertise the connecting service. The audio announcements may comprise stored audio, text-to-speech generated audio, or a combination of the two.

The system may, in conjunction with the alpha name server, employ a location-based mechanism that uses the location of the caller, and in certain cases the location of the called party or both locations, and may direct the choice of translation between user-entered text and the connection that is required. Furthermore the alpha name server may carry pricing information for connections, and announce this to the caller prior to connection. This allows Text Dialling to be used with a range of tariffs including but not limited to Freephone and premium rate.

Alternative embodiments of the alpha name server may also support VPN functionality, where certain translations between names and numbers are personalised or restricted to a particular user or closed group of users. Commonly in such cases short-form dialling is possible.

A key advantage of Text Dialling is that it allows a user to initiate a call to an organisation, brand, service, chat room, bulletin board etc. by simply using the name and a well-known service number, which may preferably be a short code such as 222.

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The text transport can use SMS, which is supported in all modern and most legacy GSM handsets, while the voice call connection may use outdial from the network, which also does not require any special handset capabilities. Similar alternative technologies may be used on other types of network. Text Dialling may be readily

5   implemented to work immediately with unmodified GSM handsets, but benefits still further by being implemented utilising the present invention, which modifies the handset to improve the user experience.

The invention works identically even while the user is roaming, provided the service number used to dial out from the handset is in International format. In this case there

10   are no billing implications as billing works identically as it does in networks without Text Dialling.

Text Dialling may be used with multiple directories. For example a hierarchy of directory searching may be provided, or alternatively different service codes could be used to specify—

15   • The user's personal directory

     • A local directory

     • A national directory

     • An international directory

In a further embodiment of Text Dialling, the user is also able to send a text message

20   to the service platform as an alternative to making a voice call. To achieve this, a syntactic rule is preferably applied to the text message content. In a preferred embodiment, the destination address specifier and the message are both included in the body of the text message, separate by '...' as a delimiter. The message is then sent to 222, which is the preferred service code for embodiments of Text Dialling that do not

25   utilise modified handsets as described by the present invention. (This service code has been chosen because it is easy to remember, and corresponds to the number keys for 'ABC', so that the Text Dialling service can be promoted as being 'as easy as ABC!') The delimiter '...' has also been chosen because of its association with continuation. Text message in the preferred embodiment my be sent in three ways:

30   1. text in the form of just a "<name>" sent to 222. This causes voice connection to a number associated with the interpreted name. The symbols <> mean substitution of the <> and contents by a literal string.

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2. text in the form "<name>...<message>". This causes the text <message> to be sent to a number associated with the interpreted name.

3. text in the form "...<message>". This causes the text <message> to be sent to the number most recently determined using a Text Dial message, i.e. a type of

5   continuation message.

For example

- Text 'British Airways' sent to 222 results in a voice call being set up to the airline.

- Text 'British Airways...Arrival time of BA567' results in
10   'Arrival time of BA567' being sent by text messaging means to British Airways, and no voice call being set up. When British Airways replies, the reply preferably comes from the CLI '222'. The network retains the association between 222 and British Airways, so that if the user sends a continuation text message starting with '...', or makes a voice call to 222, he
15   is automatically connected with the airline.

Alternatively, delimiters as described above may be avoided altogether if one short code is used as the destination number for the text message used to specify the alphanumeric address and a different short code is used as the destination for text messages to be sent to that address or as the destination for requesting an outdialled
20   call set-up.

In an embodiment, speed of call set-up may be improved by making use of the knowledge of the user's location that is carried with the user's text message. This message informs the SMS Router of the address of the MSC/VLR to which the user is connected. The SMS Router may then imitate an HLR, and request a roaming number
25   from this MSC/VLR. If this roaming number is then passed to the Voice Switching equipment, then an outdialled call may be made to the user without further recourse to HLR routing queries.

The system may generate service usage statistics such as information regarding the number of calls to particular services and the text identifiers used to access them. In
30   addition, the system can report all text identifiers for which there is no entry in the database. This will enable the network operator or service provider to determine whether alternative text identifiers need to be added to the database to enable access to

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existing services, or whether there is a demand for additional services. The SMS
Wizard also retains a log of the translations made, and the translations that could not
be completed. The log of unsuccessful translations allows the system operator to
determine the types of destination that are being requested, and the types of errors that
5 are being made, and allows the SMS Wizard content to be developed using this
feedback in a way that matches the users' needs. These facilities enable maximisation
of service availability and system usage, with consequent customer satisfaction and
revenue generation.

In so far as the embodiment(s) of the invention described above may be implemented,
10 at least in part, using software controlled processing apparatus, it will be appreciated
that a computer program providing such software control and a storage medium by
which such a computer program is stored are envisaged as aspects of the invention.
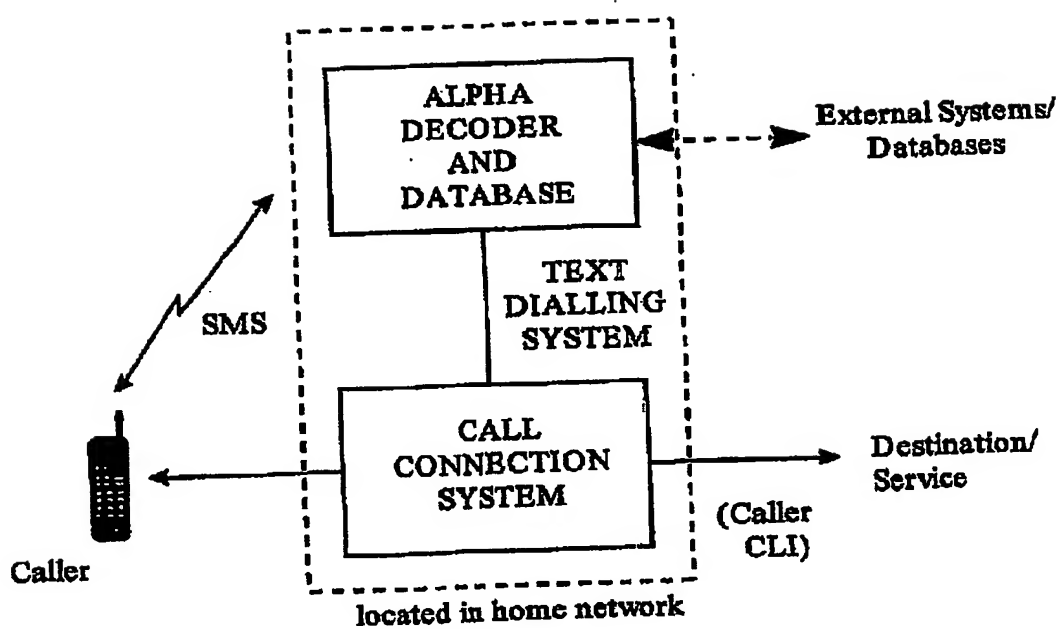
Figure 1. Text Dialling System

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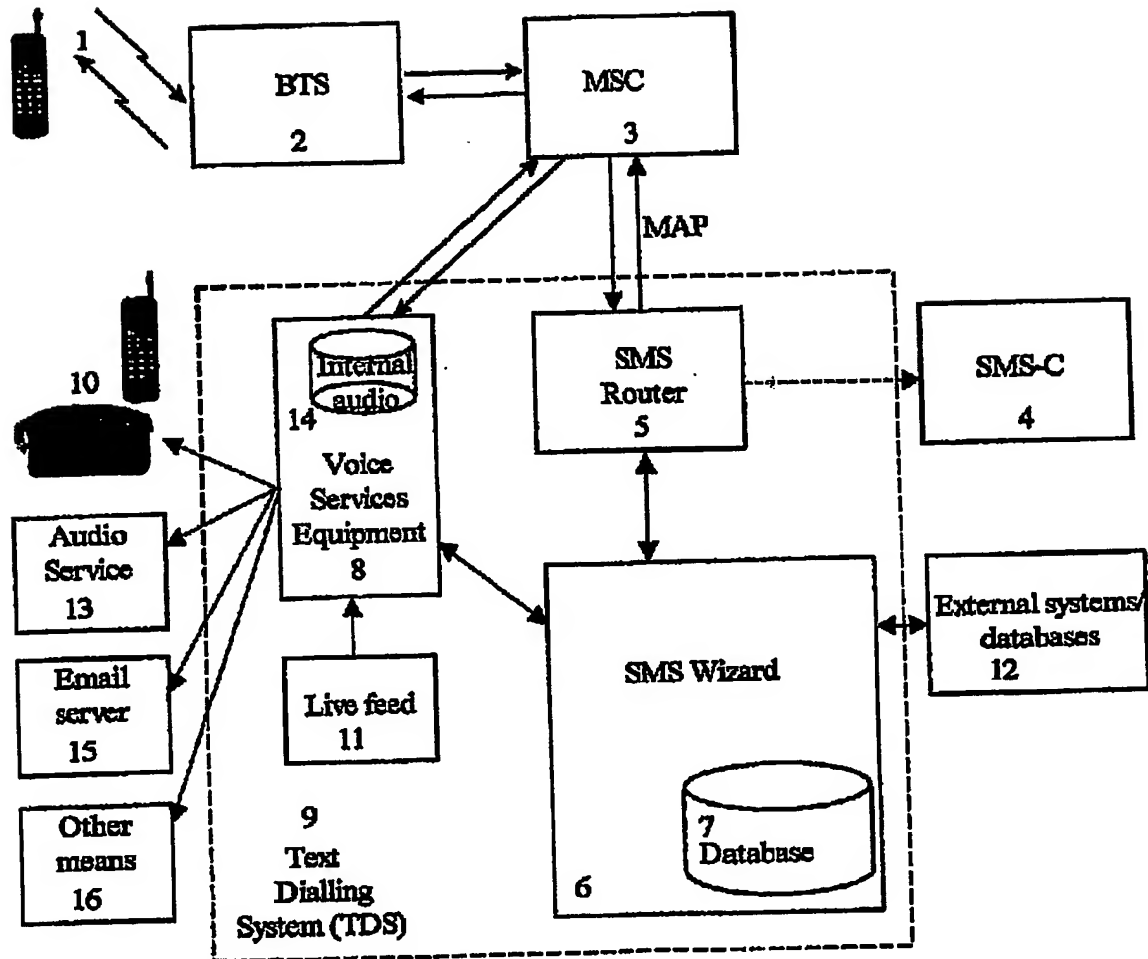
Figure 2 - System Diagram

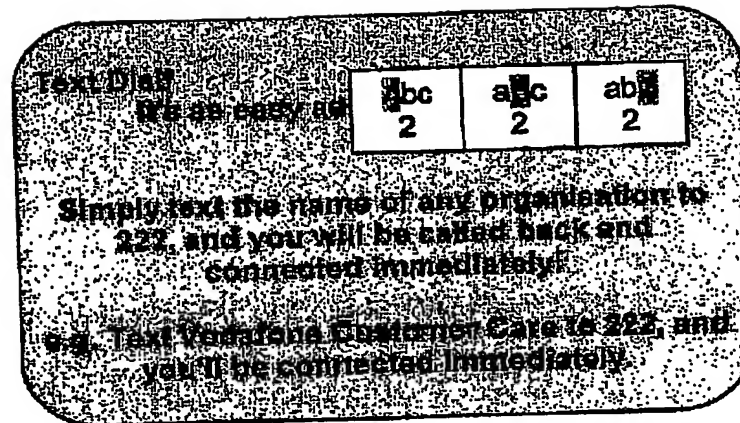|	
BTS	Base Transceiver Station
MSC	Mobile Switching Centre
SMS-C	Short Message Service Centre
MAP	Mobile Application Part

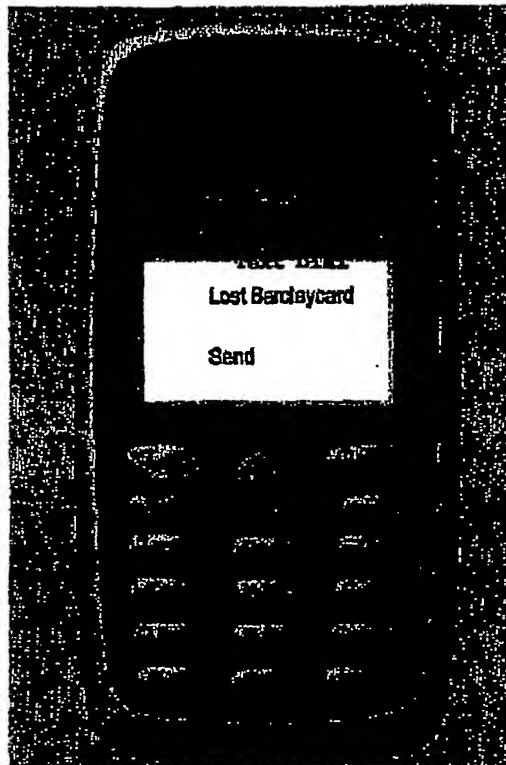Figure 3 – Example Instruction card for the Text Dial service

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Figure 4 – Handset in Example Text Dialling mode